IN THE CLAIMS:

1.   (Currently Amended) A projection electron lithography system, comprising:

a lithography tool for emitting a beam of electrons and producing measurement information; and

a processor including,

a plurality of different predictive models for producing predictive information, and

an adaptive estimator that iteratively selects a best predictive model from said plurality of different predictive models and controls for controlling placement of said the beam of electrons based on said predictive information from said best predictive model and said measurement information from said lithography tool, said adaptive estimator employing having a tunable strength parameter to determine an optimal adaptation weighting criterion.

2.   (Currently Amended) The system of claim 1, wherein said adaptive estimator compensates for heating and beam drift effects.

3.   (Currently Amended) The system of claim 1, wherein said adaptive estimator employs is a Kalman filter, using least-squares based linear matrix algebra.

4.   (Original) The system of claim 1, wherein said system is a SCALPEL system.

5.   (Currently Amended) The system of claim 1, wherein said adaptive estimator is an adaptive Kalman filter that iteratively selects one of said plurality of different pre-existing models until a best one of said plurality of different pre-existing models emerges.

6.   (Currently Amended) The system of claim 1, wherein said adaptive estimator is an adaptive Kalman filter and each of said plurality of different predictive models is partitioned

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into wafer scale components and die scale components, said adaptive Kalman filter only employed for wafer scale components.

7.   (Currently Amended) The system of claim 1, wherein said plurality of different predictive models differ due to a single parameter that varies in each of said plurality of different predictive <u>models</u>.

8.   (Previously Presented) The system of claim 1, wherein said plurality of different predictive models includes three or more models.

9.   (Currently Amended) A <u>computer implemented</u> process for controlling projection electron lithography, comprising:

emitting a beam of electrons;

producing measurement information on said emitting step;

producing predictive information related to the projection electron lithography process based on a plurality of different predictive models;

<u>iteratively</u> selecting one of said plurality of different predictive models until a best <u>predictive model from</u> ~~one of~~ said plurality of different predictive models emerges; and

controlling placement of the beam of electrons based on selected predictive information from said best <u>predictive model and said</u> ~~one and the~~ measurement information<u>, wherein said</u> <u>controlling includes determining an optimal adaptation weighting criterion employing a tunable</u> <u>strength parameter.</u>

10.   (Currently Amended) The process of claim 9, wherein said controlling step ~~is~~ ~~implemented as~~ <u>employs an adaptive</u> a Kalman filter ~~using least-squares-based linear matrix~~ ~~algebra.~~

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11.   (Original) The process of claim 9, wherein said controlling step compensates for heating and beam drift effects.

12.   (Original) The process of claim 9, wherein said process is a SCALPEL process.

13.   (Currently Amended) The process of claim 9, wherein said controlling step is implemented as an adaptive Kalman filter and each of said plurality of _different_ predictive models is partitioned into wafer scale components and die scale components, said adaptive Kalman filter only employed for wafer scale components.

Claims 14-15 (canceled)

16.   (Previously Presented) The process of claim 9, wherein said plurality of different predictive models differ due to a single parameter that varies in each of said plurality of different predictive models.

Claim 17 (canceled)

18.   (Currently Amended) The system of claim 1 ~~17~~ wherein said plurality of different predictive models are only directed to producing said predictive information for corrections associated with a die scale.

Claims 19-20 (canceled)

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